



— ZX2 —

# USER MANUAL



*Z Microsystems*

FCC INFORMATION



# WARNING


TO PREVENT FIRE OR SHOCK HAZARDS, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE. ALSO, DO NOT USE THIS UNIT'S POLARIZED AS PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLETS UNLESS ALL THREE PRONGS CAN BE FULLY INSERTED



1. Use the power and video cables supplied with the product to help prevent interference with radio and television reception. The use of other cables and adapters may cause interference with electronic equipment in the vicinity of this unit.
2. This equipment has been tested and found to comply with the limits for Class "A" digital devices, pursuant to certain limits imposed by Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when equipment is operated in commercial environments.




- This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
3. Operation of this equipment in a residential area is likely to cause interference in which case the user will be required to correct the interference at his own expense. Changes or modifications not expressly approved by Z Microsystems could void user's authority to operate the equipment.




# CAUTION

RISK OF ELECTRIC SHOCK - DO NOT OPEN


CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE COVER (OR BACK OF UNIT). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.



This symbol warns the user that insulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any part inside this unit.



This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included. Therefore it should be read carefully in order to avoid any problems.



SECTION	PAGE
Introduction .....	4
About This Manual .....	4
Safety Precautions.....	4
Product Description .....	5
Installation Instructions .....	6
Shipment Contents .....	6
Preparations.....	6
Cable Connections .....	7
Installing a ZX2 Station in a Rack .....	8
Inserting a ZX2 Station into a Rack.....	11
Operations.....	12
Removing Top Cover of ZX2 Station.....	12
Removing/Installing Memory Chips.....	13
Changing or Re-installing a PCI Card .....	14
Re-Installing Top Cover of ZX2 Station.....	15
Removing the Power Supply .....	16
Inserting a Power Supply.....	17
Removing the Lockable Face Plate Cover .....	18
Installing the Lockable Face Plate Cover .....	19
Powering Up the ZX2 Station.....	20
Removing the TranzPak2 Module .....	21
Inserting the TranzPak2 Module.....	22
Status Indicator.....	23
Maintaining the ZX2.....	24
Replacing the ZX2 Air Filters.....	25
Troubleshooting .....	26
Troubleshooting .....	26
Appendix .....	27
Mechanical Outline for ZX2 Station .....	27
Specifications for ZX2 .....	29
Replacing Parts .....	31
Disclaimer .....	32
Customer Support.....	33
Customer Feedback.....	34

## ABOUT MANUAL

This Manual is also available on the Z Microsystems website ([www.zmicro.com](http://www.zmicro.com)). We recommend you carefully read this manual and follow the instructions in the Installation chapter for verification of system functions and control settings.



## SAFETY PRECAUTIONS

### DANGER:

To avoid shock hazard:

- Do not connect or disconnect the ZX2 during an electrical storm.
- The power cord plug must be connected to a properly wired and grounded power outlet.
- Any equipment to which the ZX2 will be attached must also be connected to properly wired and grounded power outlets.
- Do not penetrate the ZX2 with any screw longer than .18" or damage will occur.

## PRODUCT DESCRIPTION



The ZX2 Station is a low-profile, rack mountable, computing and graphics processing powerhouse. At only 3.45" (2U) high by 20 inches deep, this compact, lightweight, rugged workstation gives back valuable rack space and delivers an extremely flexible and high-performance solution that is unbeatable in mission-ready applications.

The ZX2 Station integrates the latest computing technology with a system architecture supporting any Extended ATX form-factor motherboards with support for up to six rugged hot-pluggable TP2 removable drives, a slimline DVD-RW, and an environmental control board to support proper thermal regulation. User-friendly features include a front accessible power switch, two front accessible USB ports for rapid connectivity, and a quick release top access cover for ease of service and hardware installation.

Optimized for rugged conditions, the ZX2 hosts innovative PCI card hold-down brackets that secure cards in all three axis (X/Y/Z). In addition, the front panel provides a filtered dust door with a systems status display to quickly monitor the status of the rugged server. Dual redundant 650W power supplies insure minimal system downtime with fail-over support while supporting the power requirements of the latest multi-core processors and high-end PCI Express graphics cards.

Z Microsystems' engineers are experts in the design of systems that reduce the risk, cost and failure caused by harsh environmental conditions. Designed to exceed MIL-STD 167 for vibration and MIL-STD 461 for EMI, ZX2 Stations are a robust solution for hostile, field-ready applications. Enhanced military options such as EMI filtered power supplies with Mil-Circular connectors and locking security panel are available.

### Highlights

- Supports latest Intel Quad Core Xeon & AMD Quad Core Opteron processors
- 650W dual redundant power supply
- 19" rack mountable
- Only 20 inches deep
- Slim 2U (3.45") height
- 3 PCI expansion slots
- Ultra-secure PCI card brackets
- Lightweight rugged packaging
- Up to 6 rugged removable SATA or SAS TranzPak2 HDDs
- Slim DVD-RW and front accessible USB slots
- Environmental control board with status display

## SHIPMENT CONTENTS

Ensure all of the following parts are included in the package received from Z Microsystems. Verify all parts have not been damaged during shipment. If any of the parts are missing or damaged, immediately contact Z Microsystems Customer Service at 858-831-7000.

- ZX2 Station
- User Manual
- Power Cables

Remember to save the unit's original shipping materials. It may be necessary to move the unit at a later date.

## Preparations

In preparation to install the ZX2, please take the following precautionary steps:

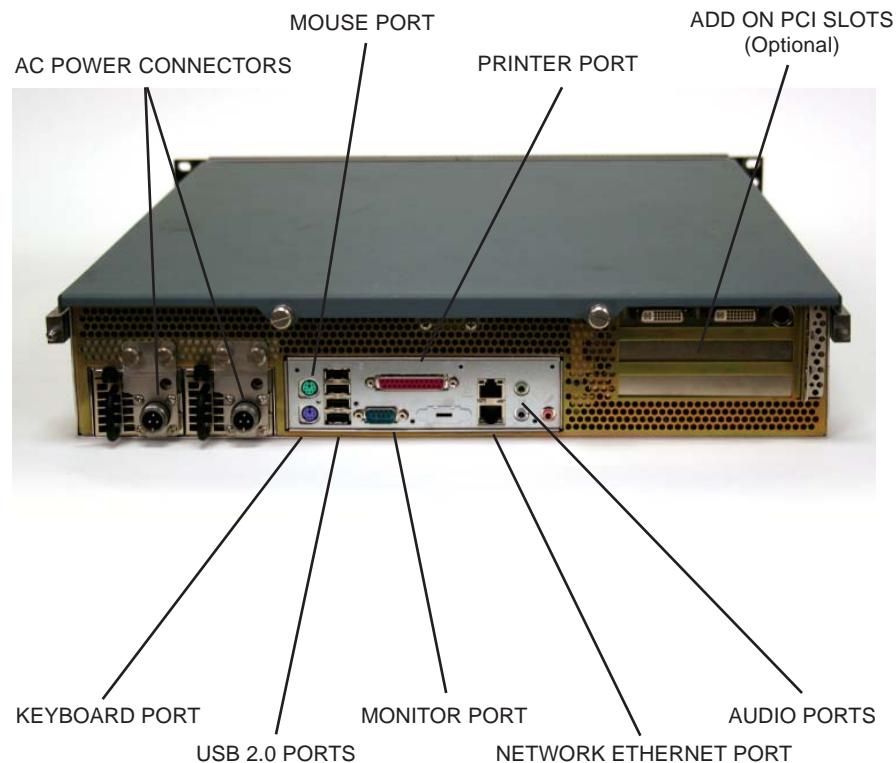
Turn off the electrical power to your computer.



*NOTE: For the fastest and easiest installation of the ZX2 Station, please follow these steps in the sequence presented.*

## CABLE CONNECTIONS

Shown here are typical customer specific examples.



Different ZX2 Server configurations available. Above is a sample configuration with a Super Micro X7DA8 motherboard and dual redundant military power supplies with EMI filter.



## INSTALLING A ZX2 STATION IN A RACK

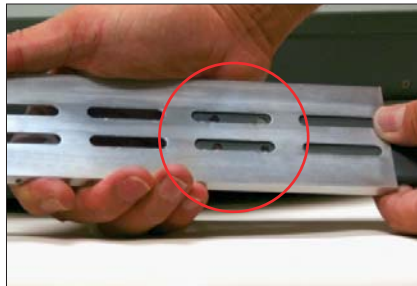
**NOTE:** If the rack is greater than 20", slide extensions will be required to support 24" – 26" rack depths. If slide extensions were not part of your order, please contact a Z Micro sales representative for additional assistance. (For 20" depth rack, the slides can be directly attached to the rack without any need for slide extensions.)



1. The sides of your ZX2 Station will be pre-tapped for installing the slide rail components.



2. Attach the stationary rail to the side of the ZX2 unit using a Philips screwdriver and assembly screws no longer than .18". Repeat on other side.



3. Place the metal slide extension over the sliding rail arm component. Align the elliptical holes at the desired length to fit your rack.

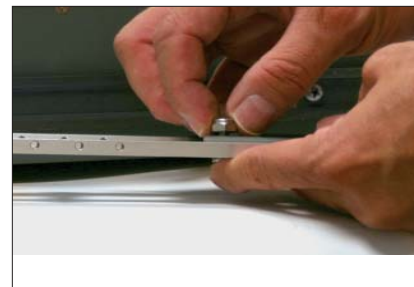


4. Holding both pieces, insert the screw through both the metal slide extension and the sliding rail arm component.



5. Using a Philips screwdriver, tighten the screw to clamp the two pieces together.

## INSTALLING A ZX2 STATION IN A RACK



6. Turn both pieces over and place a lock washer over the stem of the screw. Twist the lock washer on the stem to make the assembly firm.



7. Using a socket screwdriver, hold the lock washer in place and tighten the screw from the other side. Repeat steps 4-7 for each assembly screw.

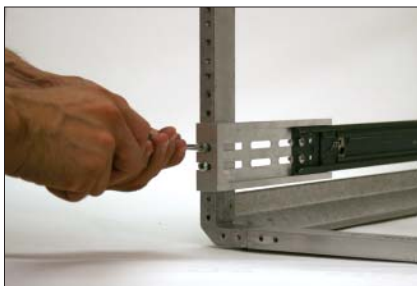
## INSTALLING ZX2 STATION IN A RACK



1. Using a Philips screwdriver, install two screws on the front of the rack at the desired position level. Repeat on other side of rack front.



2. Position the front of the assembled slide rail component onto the two rack screws as shown above.



3. At the rear of the rack, attach two more screws, positioning the slide rail component at a level position. (Note: slide rail shown with Slide Extension).



4. Return to the front face of the rack and tighten the two assembly screws. Confirm that the front of your bracket is secure and flush with the rack..



5. Pull both slide arms out and forward of the rack.

## INSERTING ZX2 STATION INTO A RACK\*



1. Engage the rear of the stationary rail to the front of the slide rail. Insert into the slide rail.



2. When you reach the lock button's flange on the stationary rail, use your thumb to push down the flange in order to bypass and continue.



3. Once you've connected with the lock button, use your finger to push down the lock button to continue moving the slide rail forward..



4. Press the lock latch on the slide rail to continue. This latch may be located either on top or bottom of the rail depending on the side installed.

*\*For Ease of viewing the installation process, Slide rails in these pictures not shown attached to rack*

## REMOVING TOP COVER OF ZX2 STATION



1. Loosen both lock screws at the rear of the unit.



2. Using one thumb push slightly down on the front edge of the top and the other hand to pull the top from the rear or the unit.



3. Pull the top back to clear the side tongues from the grooves in the casing and lift the top away.

## REMOVING/INSTALLING MEMORY DIMM



1. Each of the Memory DIMM slots is equipped with locking latches to secure the Memory DIMM in place.



2. Use your fingers to push the locking latches away from the existing Memory DIMM. Gently remove the Memory DIMM from its slot



3. Install the new Memory DIMM by carefully aligning the Memory DIMM parallel to the slot and then gently but firmly inserting.

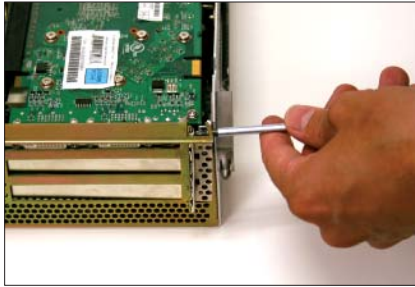


4. Carefully push the Memory DIMM in using your thumbs. Secure the Memory DIMM by pulling the locking latches towards the Memory DIMM.

## CHANGING OR RE-INSTALLING A PCI CARD



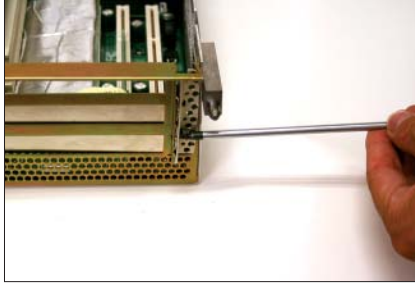
1. Use a Philips screwdriver to remove the attachment screws to the small, black retainers located around the card. Remove retainers with your fingers.



2. Using a Philips screwdriver, remove the attachment screws from the card placeholder plate.



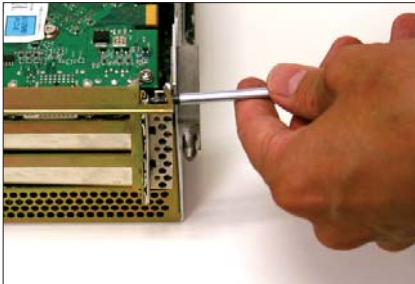
3. Carefully and gently pull the PCI card away from the unit. Be very careful not to bend or twist the card as damage may occur.



4. Using a Philips screwdriver, remove the attachment screw for the selected placeholder plate. Remove the plate and install your PCI card.



5. After installing and securing your other PCI card, carefully reposition the existing PCI card back into its former location.



6. Re-attach the PCI card to the card placeholder plate. Restore and attach the black retainers from Step 1, above to the sides of the card.

## RE-INSTALLING TOP COVER OF ZX2 STATION



1. Place cover loosely onto ZX2 station. When placed on the station, make sure your side flanges properly align with the corresponding slots.



2. Using one thumb push slightly down on the front edge of the top and the other hand to push the top cover from the rear or the unit.



3. When the top is firmly seated onto the station casing, turn the attachment screws at the rear of the top cover to secure .



## REMOVING THE POWER SUPPLY



1. Using a Flathead screwdriver, remove both screws from the rear top plate of the Power Supply module



2. Insert a finger into the handle and begin to pull the module from the station.



3. Gently but firmly continue to pull the Power Supply module out of the ZX2 station.



4. When the Power Supply module is fairly extracted, lift and support the module away from the ZX2 station.

**NOTE:** If one of the Power Supply modules is removed, then the system will still operate with the one remaining power supply. A failed power supply will be identified by an audible alarm.

## INSERTING A POWER SUPPLY MODULE



1. Carefully position the Power Supply module to the docking bay using both hands for steady support.



2. Using your thumb positioned on the rear of the Power Supply Module, firmly push the module into the docking bay.



3. As you reach the rear face of the ZX2 station, grasp the handle with your finger to provide extra leverage for inserting the module.



4. Use a Flathead screwdriver refasten the security screws of the Power Supply module to the ZX2 station.

**NOTE:** Different power supply options are available. Step 3 (above) is an example of dual redundant power supplies with military connectors. Step 4 (left) is an example of dual redundant power supplies with IEC connectors.

## REMOVING THE LOCKABLE FACE PLATE COVER

**NOTE:** The Lockable Face Plate Cover is an option available only to certain models.



1. Using the provided key, turn to the right to unlock the face plate cover.



2. Using a Flathead screwdriver, release the attachment screws on either side of the face plate cover.

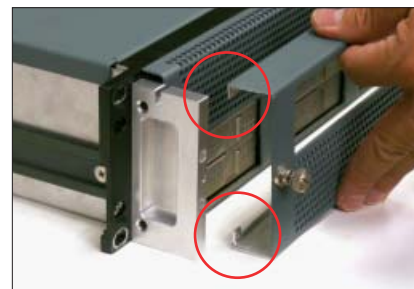


3. Pull the right side of the face plate cover away from the right support bracket.



4. Slide the face plate cover away and towards the right from the left side support bracket.

## INSTALLING THE LOCKABLE FACE PLATE COVER



1. The face plate cover has small flanges on the left side that perfectly fit within corresponding slots on the left support bracket.



2. The corresponding slots on the support bracket are displayed above.



3. Align the flanges on the left side of the face plate cover with their corresponding slots on the left support bracket.



4. When the left flanges are secured in the support bracket, position the right side of the face flat cover onto its corresponding support bracket.



5. When both sides are secured onto their respective support brackets, turn the key to lock the face plate cover.

## POWERING UP THE ZX2 STATION

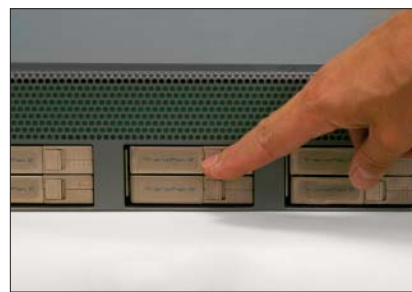


1. To power up the ZX2, press and hold (about 1 second) the Power Supply Switch at the center right side of the unit.

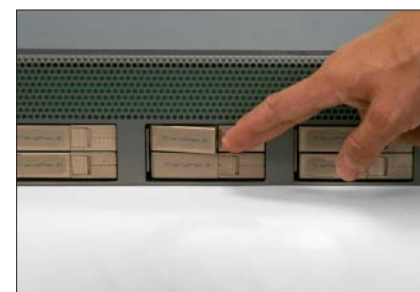


2. The display may possibly indicate items that require attention. If such is the case, please refer to the "Troubleshooting" in the Appendix.

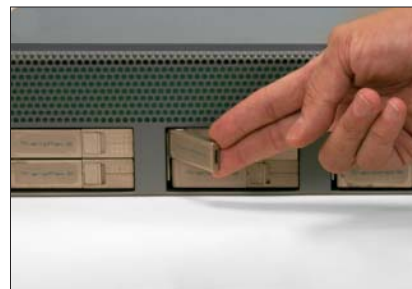
## REMOVING THE TRANZPAK2 MODULE



1. Slide the locking catch towards the right to allow the locking handle to spring open.



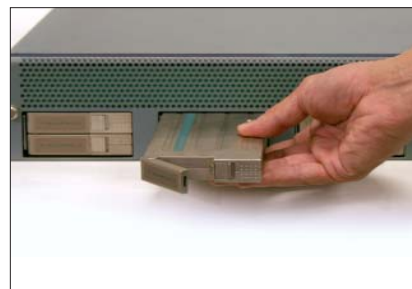
2. The locking handle will swing out.



3. Push the locking handle to the left. This will disconnect the TranzPak2 from the rear connector.



4. Gently but firmly begin to pull the TranzPak2 module out as it slides off the grounding contacts.



5. When the TranzPak2 module is fairly extracted, lift and support the module away from the ZX2.

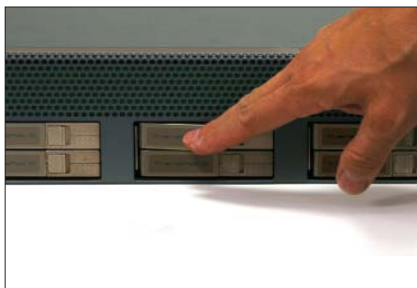
## INSERTING THE TRANZPAK2 MODULE



1. Raise the TranzPak2 module to the slot. and insert into the docking bay .



2. Use your thumb to gently push on the TranzPak2 thumb plate until the module is seated against the rear connector.



3. Press the locking handle until it snaps into place.

## STATUS INDICATOR

The ZX2 features status lights to effectively monitor the activities of the product. :

Fan LED – (LED with “Fan” text and fan symbol)

1. Green = system fans are running normally
2. Orange = one or more system fans is malfunctioning
3. RED = all system fans are malfunctioning or system fans are not installed

Power On LED

1. Orange = 5V standby available, system is in standby (meaning OFF) mode.
2. Green = system is ON.
3. OFF = system is not connected to an AC power source



Power Switch

OT (Over Temp) LED

1. OFF = system temperature is normal
2. Red = system temperature is reaching critical condition. User intervention is needed.

HD LEDs

1. OFF = No hard drive activity or no hard drive connected
2. Blinking orange = Indicates hard drive activity

LAN LED 1 and 2

1. Blinking green = LAN port is connected and functioning normally
2. OFF = LAN port is not connected and/or disabled

HEATER LED

1. RESERVED – Only in use for systems with optional heater



## MAINTAINING THE ZX2



**WARNING:** *Be sure to turn off the power before you perform any maintenance system.*

## CLEANING THE ZX2

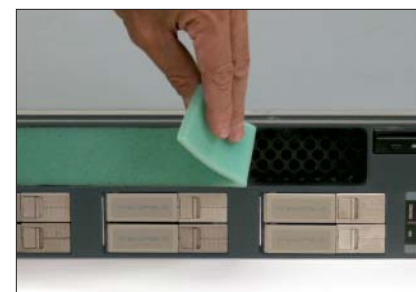
Unplug the ZX2 from the power outlet before cleaning.

- To clean the surface of the ZX2, lightly dampen a soft, clean cloth with water or mild detergent and wipe the surface gently.

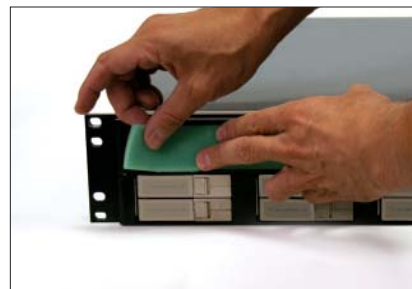
## REPLACING THE ZX2 AIR FILTER



1. Remove the unit's face plate by releasing the screw on the right side of the unit. Repeat the procedure on the left side.



2. Remove the existing air filter strip from the unit and discard.



3. Install the new filter to the unit and use your fingers to press it firmly into place.



4. Reattach the face plate and tighten the screws on both sides

## TROUBLESHOOTING

If the following problems occur on your ZX2, follow the steps provided below. If these procedures do not provide recovery to the system, please contact the Z Microsystems Customer Service Department.

### No Power to the System

1. Check that the power cable is properly connected to the power supply.
2. Check that power to the system is good.
3. Check that power to the power supply is engaged.
4. If neither of these is the cause, contact Z Microsystems' Customer Service Department.

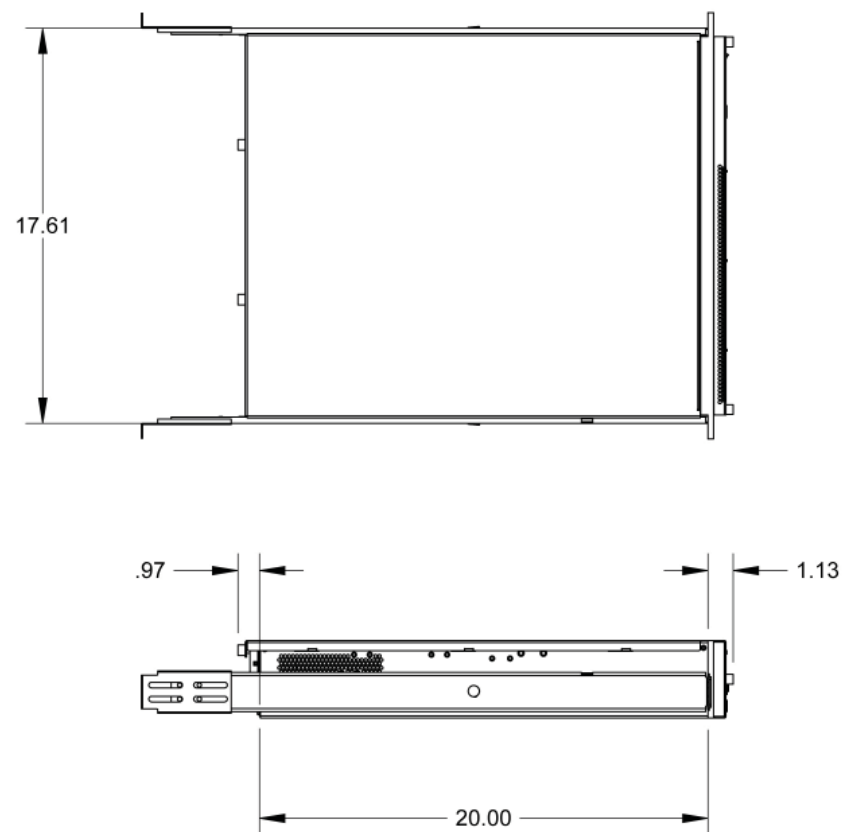
### System Beeps

Note the number of beeps and/or its sequence. The motherboard user manual will have a list of beep codes and what they mean. Contact Z Microsystems' Customer Service Department for assistance.

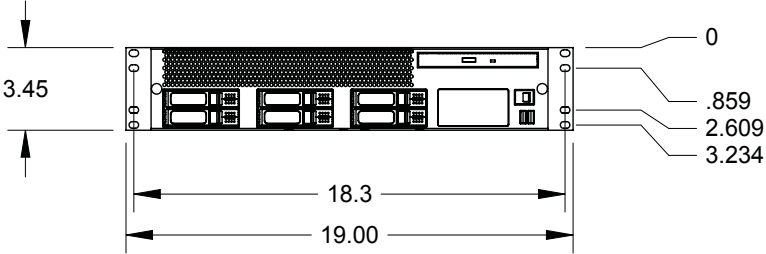
### Audible Alarm:

Power supply is bad, replace per procedure on page 16.

## MECHANICAL OUTLINE FOR ZX2



MECHANICAL OUTLINE FOR ZX2



SPECIFICATIONS FOR ZX2

<b>System Capacities</b>	
	Up to 6 TranzPak 2 storage modules, SATA or SAS drives available
	Up to 96GB of system memory depending on the motherboard of choice
<b>Power Supply</b>	
	Zippy Dual Redundant AC Total Output Power: 650W AC Input Range: 90-264V AC Input Frequency: 47-63Hz, 400Hz
	24V DC Supply Option Total Output Power: 600W DC Input Range: 18V – 36V Max Input Current: 35A
<b>Physical</b>	
Total Size	3.45"H x 17.14"W x 20.00"D (inside rack)
Total Weight	Approximately 35 lbs.
Storage Option	SATA or SAS
<b>Environmental</b>	
Operating Temp	0° to 50° Celsius
Non-Op Temp	-40° to +70° Celsius
Op Humidity	Up to 95% relative humidity per MIL-STD-801F section 507.4 (optional conformal coated boards required)
	Up to 95% relative humidity per MIL-STD-810F section 507.4 for 48 hours with non-conformal coated boards.
Operating Altitude	Up to 10,000 ft.
Non-Op Altitude	Up to 40,000 ft.
Vibration	Constant 0.5g's from 5 to 50Hz per MIL-STD-167-1
Operating Shock	40g's, 11ms, 1/2 sine in X-Y-Z axis per MIL-STD-801F Section 516.5

EMI	CENELEC 55022
	MIL-STD-461E: CE102, RE 102, CS101, CS114, CS115, CS116 (NOTE: Properly shield cables required)
Fungus	Non Nutrients / contaminants
<b>Reliability</b>	
Operating Life	10 Years
Maintainability	< 20 minutes at line replaceable unit (LRU) level
<b>Regulatory</b>	
Safety	UL 60950 used as a guideline
<b>Quality/Workmanship</b>	
	IPC / ISO 9001:2008 and applicable section of MIL-HDBK-454
<b>MIL-SPEC</b>	
	Additional extended range environmental military specifications can be met with optional enhancements. See your Z Micro representative for details.

## REPLACING PARTS

If the Z Microsystems Technical Support Engineer determines that the product needs to be replaced, a Customer Service Representative will issue a Return Material Authorization (RMA) number.

An RMA number is required to return a product to Z Microsystems, regardless of the reason for the return.

The Z Microsystems Customer Service Department/RMA Request Form will ask the customer to provide the following information:

- Model number of the defective product
- Serial number of the defective product
- Problem with the defective product
- Return "ship to" address
- The name and address of the company department to which we will send the invoice (if product is out of warranty or is different from the "ship to" address.
- Phone number and e-mail address of contact
- Purchase order number

You will be given an RMA number and will be asked to send the product to:

Z Microsystems  
ATTN: (RMA#) It is very important to reference the RMA#  
9820 Summers Ridge Road  
San Diego, CA 92121



## Disclaimer

Z Microsystems warrants that every product is free from defects in materials, workmanship and conforms to Z Microsystems' stringent specifications.

Z Microsystems calculates the expiration of the warranty period from the date the product is shipped. This means that the ship date on your invoice is your product ship date unless Z Microsystems informs you otherwise. During the warranty period, Z Microsystems will provide warranty service under the type of warranty purchased for the product.

Replacement parts will assume the remaining warranty of the parts they replace. If a product does not function as warranted during the warranty period, Z Microsystems will repair or replace the part (with a product that is as a minimum functionally equivalent) without charge.

If the product is transferred to another user, the warranty service is available to that user for the remainder of the warranty period.

Z Microsystems' warranties are voided if the covered product is damaged due to an accident or abuse. The warranty is voided if the product is shipped in sufficient packaging.

Under no circumstances is Z Microsystems liable for any of the following:

1. Third-party claims against you for losses or damages,
2. Loss of, or damage to, your records or data, or
3. Economic consequential damages (including lost profits or savings) or incidental damages, even if Z Microsystems is informed of their possibility.

Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights that vary from jurisdiction to jurisdiction.

Warranty does not take effect until full payment is received by Z Microsystems.

## CUSTOMER SUPPORT



*NOTE: If possible, stay by the computer. The Z Microsystems Technical Support Representative may wish to go through the problem over the telephone.*

If you are unable to correct the problem yourself, contact:

Z Microsystems at:

Phone: (858) 831-7000  
 Fax: (858) 831-7001  
 Website: [www.zmicro.com](http://www.zmicro.com)

Before calling, please have available as much of the following information as possible:

1. Model and serial number from the label on the unit.
2. Purchase P.O.
3. Description of problem
4. System configuration (hardware fitted, etc.)
5. System BIOS version number
6. Operating System and version number



*NOTE: More help, late-breaking news and details of the latest accessories for these products may be found on the worldwide web at: <http://www.zmicro.com>*

## CUSTOMER FEEDBACK

We value feedback on our products, their performance, problems found, and welcome all constructive suggestions. Please send such productive information in writing to:

Customer Service  
Z Microsystems  
9820 Summers Ridge Road  
San Diego, CA 92121  
or [www.zmicro.com](http://www.zmicro.com)



*Z Microsystems, Inc.*

9820 Summers Ridge Road

San Diego, CA 92121

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Website: [www.zmicro.com](http://www.zmicro.com)

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